

IN THE UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF OKLAHOMA

STATE OF OKLAHOMA,

Plaintiff,

V.

TYSON FOODS, INC., *et al.*,

Defendants.

Case No. 4:05-CV-329GKF-PJC

DECLARATION OF GORDON C. RAUSSER IN RESPONSE TO THE STATE OF  
OKLAHOMA'S MOTION IN LIMINE TO EXCLUDE PORTIONS OF  
DEFENDANTS' "EXPERT REPORT OF WILLIAM H. DESVOUSGES AND  
GORDON C. RAUSSER" AND RELATED TESTIMONY



1. I filed a report with Dr. William Desvousges in this matter on March 31, 2009. I make this declaration in response to plaintiff's motion *in limine*, dated June 19th, 2009, to exclude the analysis contained in Chapter 3 of our expert report and related testimony. Materials relied upon for this declaration but not included in my initial report are attached to this report as Exhibit A.

2. In Chapter 3 of our expert report we investigated the effect of the alleged decrease in water clarity on the value of properties around Tenkiller Lake, by comparing those prices to a benchmark in one of the counties situated around Eufaula Lake and a nearby town. Our analysis controlled for various differences in house characteristics in evaluating home price differences between two locations.

3. As mentioned in our report, to test for sensitivity with regard to the comparability of the two lakes we also compared the movement in house prices around the Tenkiller Lake with the movement in house prices around a portion of the Eufaula Lake over a fourteen year period.<sup>1</sup>

- a. By comparing the movement of prices around the Tenkiller Lake with the Eufaula benchmark, we control for permanent differences between the two lakes, as well as factors that affect house prices that change over time in the same way for each lake.
- b. We find that house prices in Tenkiller Lake suffered no diminution in value over the time period.
- c. Our results are insensitive to any omitted factors unless they are determinants of house prices *and* vary over time differently for the two lakes *and* led to a decrease in the price of houses in Eufaula Lake relative to Tenkiller Lake.

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<sup>1</sup> Initial Expert Report and Dr. Rausser and Dr. Desvousges, filed March 31, 2009 (hereafter "Rausser and Desvousges Initial Expert Report"), at page 22.

- d. In addition, we compared the movement of house prices in Tenkiller Lake to a second benchmark – house prices in the nearby city of Tahlequah, and here again found no material difference between the movement of property values.

4. In addressing these regressions the plaintiff motion *in limine* mischaracterizes:

- a. My deposition testimony;
- b. The academic literature; and
- c. Our expert report.

***Mischaracterization of my deposition testimony***

5. Plaintiff's motion *in limine* repeatedly quotes my deposition testimony out of context.

6. The plaintiff's motion suggests that it is my view that knowledge of the housing market is not relevant to my enquiry.<sup>2</sup> A fuller reading of the deposition confirms that the actual house price transactions themselves are "as close as one can get"<sup>3</sup> to "a sufficient statistic with regard to those market conditions."<sup>4</sup> Furthermore, elsewhere in my deposition I state that I formed a good understanding of the housing market from not only the transactions data but also from my staff's interviews with local officials.<sup>5</sup>

7. The plaintiff quotes me as saying "I haven't analyzed the stock [houses available]. I've only analyzed the flow [houses sold]."<sup>6</sup>, implying that I did not consider a

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<sup>2</sup> State of Oklahoma's Motion in Limine to Exclude Portions of Defendants' "Expert Report of William H. Desvousges and Gordon C. Rausser" and Related Testimony with Integrated Brief in Support (hereafter "State of Oklahoma's Motion in Limine") in *State of Oklahoma v. Tyson Foods, Inc., et al.*, Case No. 4:05-CV-329-GKF-PJC (United States District Court for the Northern District of Oklahoma), filed June 19, 2009, at page 9.

<sup>3</sup> Deposition of Gordon Rausser, dated May 13, 2009 (hereafter "Rausser Deposition"), at 54:7.

<sup>4</sup> Rausser Deposition at 54:6-7.

<sup>5</sup> Rausser Deposition at 61:9-17.

<sup>6</sup> State of Oklahoma's Motion in Limine at page 10.

factor the plaintiff claims is important to the regression analysis. The quotation is again taken out of context. It was in response to a specific question on the price effect of an increase in the number of houses and my response explained why I had considered that specific question in terms of housing flows rather than stocks.<sup>7</sup>

8. When asked whether McIntosh, Cherokee and Sequoyah counties are in the same housing market I responded: "That's not a question that I've analyzed. I haven't visited that question and I have no opinion in that regard."<sup>8</sup> This response was accurate. I was referring to the fact that we did not conduct a formal quantitative relevant market analysis because it was not necessary given the hypothesis that we were testing. Nevertheless, Plaintiff's motion suggests that this is inconsistent with my statement that housing market conditions at Tenkiller Lake "are basically the same as those that exist for Lake Eufaula."<sup>9</sup> These statements are not inconsistent. Certainly buyers who are evaluating second home opportunities would treat the possible purchase of homes in each of the two locations as possible economic substitutes, and therefore the two locations would be in the same housing market. Moreover, the overall market conditions and their change over time are *similar* between Tenkiller Lake and Eufaula Lake. As a result, Lake Eufaula is a relevant benchmark, as is the nearby town of Tahlequah.

***Mischaracterization of the academic literature***

9. The plaintiff's motion suggests that hedonic price models used *in the* academic literature follow a "procedure outlined by [Professor] Taylor" that includes the use of a well defined set of control variables.<sup>10</sup> The plaintiff's motion violates *its* own

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<sup>7</sup> Rausser Deposition at 81:18-82:17.

<sup>8</sup> State of Oklahoma's Motion in Limine at page 10; Rausser Deposition at 68:25-69:7.

<sup>9</sup> Rausser Deposition at 62:1-4.

<sup>10</sup> State of Oklahoma's Motion in Limine at page 9.

standard by relying on Taylor's non-peer reviewed contribution to an edited book, rather than a peer reviewed journal article.

10. Regardless, as Taylor states, these control variables are included "in general," but there are no set rules. As Taylor states: "Researchers must use their knowledge of the market to determine what characteristics are relevant for determining price in their market."<sup>11</sup> Furthermore, the set of variables to include depends on the purpose of the study and the model specification. The plaintiff's motion is silent on my deposition testimony which stated again and again that the critical point regarding regression specifications is the purpose for which the analysis is being conducted.

11. As a result, the academic literature consists of a myriad of models, with different characteristics and benchmarks. See "A Survey of House Price Hedonic Studies of the Impact of Environmental Externalities."<sup>12</sup> For some representative studies:

- a. Young (1984) investigates the effect of water quality in two nearby areas alongside Lake Champaign in Vermont on house prices using a dummy variable approach. Neighborhood characteristics are not controlled for.<sup>13</sup>
- b. Carroll et al. (1996) studies the impact of a chemical plant explosion on house prices within 22 miles of the plant. Only house characteristics are controlled for.<sup>14</sup>

12. Plaintiff's motion cites an example of my own work in which I used a set of neighborhood characteristics. In that paper I was not comparing prices in one region to those in a benchmark region. The McCluskey and Rausser paper referred to set out to

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<sup>11</sup> Taylor, L., "The Hedonic Method," *A Primer on Nonmarket Valuation*, ed. Champ, Boyle, and Brown, Kluwer Academic Publishers (2003), at page 344. Exhibit H of Oklahoma's Motion in Limine.

<sup>12</sup> Boyle, M.A. and Kiel, K.A., "A Survey of House Price Hedonic Studies of the Impact of Environmental Externalities," *Journal of Real Estate Literature* 9.2 (2001), 117-144.

<sup>13</sup> Young, E., "Perceived Water Quality and the Value of Seasonal Homes," *Water Resources Bulletin* 20.2 (1984), 163-166.

<sup>14</sup> Carroll, T., et al., "The Economic Impact of a Transient Hazard on Property Values: the 1988 PEPCON Explosion in Henderson, Nevada," *Journal of Real Estate Finance and Economics* 13 (1996), 143-167.

measure the effect of the distance from the polluted area on surrounding house values all of which were affected to some degree. The paper quantified the effect on prices of distance; it was therefore important to control for neighborhood characteristics that varied with distance from the polluted area and may have affected house values.<sup>15</sup> The analysis is different than, and not relevant to, the comparison of Tenkiller and Eufaula house prices we have considered here. The purposes for each of the two analyzes are clearly different.

13. Plaintiff's motion cites three studies quoted in our expert report, as evidence that we should have used a measure of water quality in our analysis. Whereas the purpose of each one of those studies required such a measure, the purpose of our analysis did not.

- a. Poor et al. (2007) "investigates the value of ambient water quality."<sup>16</sup>
- b. Gibbs et al. (2002) estimates the effect of "a one-meter change in clarity on property value."<sup>17</sup>
- c. Michael et al. (2000) actually investigates how "water clarity variables based on different perceptions may result in differences in implicit prices," and this is why they use nine different measures.<sup>18</sup> Water clarity variables are provided by natural scientists, whereas the price effect of water clarity on house prices is driven by house buyers' and sellers' *perceptions* of water clarity. The authors study which of the nine measures most accurately reflects those perceptions.

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<sup>15</sup> McCluskey, J. and Rausser, G., "Stigmatized Asset Value: Is It Temporary or Long-Term?" *The Review of Economics and Statistics*, May 2003, 85(2): 276-285.

<sup>16</sup> Poor, P.J., et al., "Exploring Hedonic Value of Ambient Water Quality: A Local Watershed-Based Study," *Ecological Economics* 60 (2007), 797-806.

<sup>17</sup> J.P. Gibbs, et al., "An Hedonic Analysis of the Effects of Lake Water Clarity on new Hampshire Lakefront Properties," *Agricultural and Resource Economics Review* 31.1 (2002), 39-46.

<sup>18</sup> Michael, H.J., et al., "Does the Measurement of Environmental Quality Affect Implicit Prices Estimated from Hedonic Models?" The University of Wisconsin Press *Land and Economics* 76.2 (2000), 283-298.

*Mischaracterization of the results of our expert report*

14. As described, Chapter 3 of our report sets out to assess whether house values were diminished at Tenkiller Lake, and it did so by comparing prices there to a benchmark in Eufaula, as well as to the neighboring town of Tahlequah. This did not require the use of a measure of water quality, nor did it require the inclusion of characteristics for neighborhood and location.

15. The analysis of house price movements over time between the two areas means that many factors such as the amount of shoreline, the area of the lake, the number of marinas and housing developments that do not change over time are not relevant.<sup>19</sup>

16. The fact that, as I understand it, the Eufaula bingo hall at 806 Forest Avenue was turned into a casino in 2003 is unlikely to affect our results. Firstly, the majority of the properties around Lake Eufaula are at least several miles away from the casino, particularly those on the opposite shore. Secondly, market principles imply that casino workers are unlikely to be significant purchasers of lake-side properties due to income constraints. Thirdly, as I understand it, a casino also opened in Tahlequah near Tenkiller Lake in 2004. Regardless, I revisited our analysis and included a factor for the opening of the Eufaula casino, as well as one for the opening of the casino at Tahlequah. Neither of the events had a statistically significant effect on houses prices as I suggested in my deposition. Our conclusion that prices at Lake Tenkiller did not decrease relative to prices at Eufaula is robust to the inclusion of these variables.

17. The plaintiff's motion describes how demographics may be different between the two lakes.<sup>20</sup> As our report describes, the results based on price movements

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<sup>19</sup> State of Oklahoma's Motion in Limine at page 10.

over time account for differences between the two lake regions. Therefore for demographics to bias the results they must both influence house prices *and* change across the time period differently for the two regions. In fact, in the three counties that constitute those regions, the demographics that the plaintiff's motion cites vary similarly and are reasonably stable over the time period most relevant for our regression analysis.

- a. Population in all three counties increased between 1990 and 2000, but is projected by the US Census bureau to increase more modestly from 2000 to 2008:<sup>21</sup>

	1990	2000	2008
Cherokee County	34,049	42,672	45,788
Sequoyah County	33,828	39,048	41,034
McIntosh County	16,779	19,478	19,698

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<sup>20</sup> State of Oklahoma's Motion in Limine at page 11.

<sup>21</sup> U.S. Census Bureau, Population Characteristics. The census is carried out every ten years and the 2008 figures are based on the Census Bureau's estimates.



- b. The distribution of the age of residents in each of the three counties has remained very steady from 1990 to 2000 and is projected by the US Census to remain steady between 2000 and 2008:<sup>22</sup>

	Cherokee		Sequoyah		McIntosh	
	24 & under	65 & over	24 & under	65 & over	24 & under	65 & over
1990	40%	12%	38%	13%	30%	22%
2000	40%	12%	36%	14%	29%	22%
2008	39%	12%	33%	14%	29%	22%

- c. The proportion of the population that is non-white increased between 1990 and 2000 for all three counties and is projected by the US Census bureau to remain almost constant from 2000 to 2008:<sup>23</sup>

	Cherokee		Sequoyah		McIntosh	
	White	Non-white	White	Non-white	White	Non-white
1990	65%	35%	77%	23%	76%	24%
2000	66%	34%	68%	32%	73%	27%
2008	69%	31%	69%	31%	72%	28%

18. Since the sample period for my regression analysis is from 1995 to 2008, there is no support for the argument that changes in the population, age or race in the counties varied sufficiently enough to affect my results. Based on the foregoing analysis, it is clear that the characteristics plaintiff point to as missing from my regression would not change its substantive results. The property values around Tenkiller Lake have kept pace with those around Eufaula Lake and the town of Tahlequah, a result which is inconsistent with a finding of significant water clarity impairment at Tenkiller Lake.

<sup>22</sup> US Census Bureau, General Demographic Characteristics. The census is carried out every ten years and the 2008 figures are based on the Census Bureau's estimates.

<sup>23</sup> US Census Bureau, General Demographic Characteristics. The census is carried out every ten years and the 2008 figures are based on the Census Bureau's estimates.

19. I declare under the penalty of the perjury laws of the United States that the foregoing is, to the best of my knowledge, information and belief, true and correct, and that this declaration was executed in Berkeley California on July 7, 2009.

Respectfully submitted,

A handwritten signature in cursive script, reading "Gordon Rausser". The signature is written in black ink and is positioned above the printed name.

Gordon C. Rausser Ph.D.

**Exhibit A**  
**Materials Relied Upon**

**Pleadings**

State of Oklahoma's Motion in Limine to Exclude Portions of Defendants' "Expert Report of William H. Desvousges and Gordon C. Rausser" and Related Testimony with Integrated Brief in Support in *State of Oklahoma v. Tyson Foods, Inc., et al.*, Case No. 4:05-CV-329-GKF-PJC (United States District Court for the Northern District of Oklahoma), filed June 19, 2009, plus exhibits.

**Data**

U.S. Census Bureau, Population Division, Annual Estimates of the Resident Population by Age, Sex, Race, and Hispanic Origins for Counties: April 1, 2000 to July 1, 2008.  
<http://www.census.gov/popest/counties/asrh/CC-EST2008-alldata.html>

U.S. Census Bureau, State & County QuickFacts.  
<http://quickfacts.census.gov/qfd/states/40/40021.html>.

U.S. Census Bureau, Census 2000 Summary File 1, Profile of General Demographic Characteristics: 2000.  
[http://factfinder.census.gov/servlet/QTGeoSearchByListServlet?ds\\_name=DEC\\_2000\\_SF1\\_U&state=qt&qz\\_name=DEC\\_2000\\_SF1\\_U\\_DP1&\\_lang=en&\\_ts=264962686684](http://factfinder.census.gov/servlet/QTGeoSearchByListServlet?ds_name=DEC_2000_SF1_U&state=qt&qz_name=DEC_2000_SF1_U_DP1&_lang=en&_ts=264962686684)

U.S. Census Bureau, 1990 Census of Population and Housing, Summary Tape File 1 (100% Data), General Population and Housing Characteristics: 1990.  
[http://factfinder.census.gov/servlet/DatasetTableListServlet?\\_ds\\_name=DEC\\_1990\\_STF1\\_&\\_type=table&\\_program=DEC&\\_lang=en&\\_ts=264963188655](http://factfinder.census.gov/servlet/DatasetTableListServlet?_ds_name=DEC_1990_STF1_&_type=table&_program=DEC&_lang=en&_ts=264963188655).

U.S. Census Bureau, Population Division, Annual Estimates of the Resident Population for Counties of Oklahoma: April 1, 2000 to July 1, 2008 (CO-EST2008-01-40).  
[www.census.gov/popest/counties/tables/CO-EST2008-01-40.xls](http://www.census.gov/popest/counties/tables/CO-EST2008-01-40.xls).

**Articles, Treatises, and Reports**

Boyle, M.A. and Kiel, K.A. "A Survey of House Price Hedonic Studies of the Impact of Environmental Externalities." *Journal of Real Estate Literature* 9.2 (2001): 117-144.

Carroll, T., et al. "The Economic Impact of a Transient Hazard on Property Values: the 1988 PEPCON Explosion in Henderson, Nevada." *Journal of Real Estate Finance and Economics* 13 (1996): 143-167.

McCluskey, J. and Rausser, G., "Stigmatized Asset Value: Is It Temporary or Long-Term?" *The Review of Economics and Statistics*, May 2003, 85(2): 276-285.

Young, E. "Perceived Water Quality and the Value of Seasonal Homes." *Water Resources Bulletin* 20.2 (1984): 163-166.